

present invention may include where the water vapor distillation apparatus includes a source fluid input and an evaporator condenser. The evaporator condenser includes a substantially cylindrical housing and a plurality of tubes in the housing. The source water input is fluidly connected to the evaporator condenser and the evaporator condenser transforms source water into steam and transforms compressed steam into product water. The water vapor distillation apparatus also includes a heat exchanger fluidly connected to said source water input and a product water output. The heat exchanger includes an outer tube and at least one inner tube. The water vapor distillation apparatus also includes a regenerative blower fluidly connected to the evaporator condenser. The regenerative blower compresses steam, and whereby the compressed steam flows to the evaporative condenser where compressed steam is transformed into product water.

[0011] In accordance with one aspect of the present invention, a water vending apparatus having a purification system includes a dispensing system and water vapor distillation apparatus. The dispensing system is fluidly coupled to the water vapor distillation apparatus such that purified water may be distributed to a vendee-supplied vessel positioned at a filling station. A filling operation, or transfer of purified water to a vessel, is initiated through use of a control panel located on the external housing of the vending apparatus. The control panel may send a fill request signal to dispensing control circuitry, which, upon analysis of other various electrical signals, may allow purified water to flow through a predetermined network of conduits and into a vessel.

[0012] Some embodiments of this aspect of the present invention may include one or more of the following. Multiple fill stations from which a vendee may conveniently fill an array of varying vessel sizes. A multipurpose interface may be included. A multipurpose interface is capable of distributing chilled water to drinking glass-sized vessels, as well as, providing vendees or prospective vendees a means of testing the purity level of local or vending apparatus water; a molding apparatus may be incorporated into the vending apparatus system. With this configuration, water bottles are manufactured within the molding apparatus from preformed parison, filled with purified water, and dispensed. Additives may be mixed into purified water to further enhance the taste and/or purpose of the water or beverage. Use of additives may require integration of mixing and storage components into the exemplary water vending apparatus. Logic instructions associated with choosing and controlling additives may also be added to control circuitry. The water vending apparatus may be operated upon input of currency to a currency receiving module.

[0013] Some embodiments of this aspect of the present invention may include one or more of the following. The water vending may be scalable. In differing markets, demand for a water vending apparatus may vary, giving rise to a larger or smaller apparatus performing essentially the same functions. A scaled down water vending apparatus may include scaled down dispensing and purification system components to accommodate a lesser production rate, for example. A scaled up water vending apparatus may include scaled up dispensing and purification components, or utilization of more than one purification system. The water vending apparatus may be divided into separate portions such that one or more portions may be operated remotely with respect to one or more other portions. Remote operation

may necessitate extended conduits and control leads, greater pump head pressure, and/or integration of wireless communication components and protocols. The water vending apparatus may include a scale indicator to aid in preventing sedimentary buildup on surfaces exposed to hard water. The water vending apparatus may incorporate an extension hose and corresponding fill control apparatus. A filling hose may be beneficial in extending operable filling radius and general filling capability.

[0014] These aspects of the invention are not meant to be exclusive and other features, aspects, and advantages of the present invention will be readily apparent to those of ordinary skill in the art when read in conjunction with the appended claims and accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] These and other features and advantages of the present invention will be better understood by reading the following detailed description, taken together with the drawings wherein:

[0016] FIG. 1 is front view of internal components of a water vending apparatus according to one embodiment;

[0017] FIG. 1A is a front view of the vending apparatus according to one embodiment;

[0018] FIG. 2 is one embodiment of the water vapor distillation apparatus according to one embodiment;

[0019] FIG. 2A is a perspective view of one embodiment of the water vapor distillation apparatus within the water vending apparatus according to one embodiment;

[0020] FIG. 3 is a diagram of a filling station incorporated into a water vending apparatus according to one embodiment;

[0021] FIG. 4 is a perspective view of the water vending apparatus focusing on a water quality testing interface according to one embodiment;

[0022] FIG. 4A is a detail view of the water quality testing interface and a vessel for receiving water according to one embodiment;

[0023] FIG. 4B is a detail view of the water quality testing interface and a closed door according to one embodiment;

[0024] FIG. 5A is a diagram of an internal display window according to one embodiment;

[0025] FIG. 5B is a diagram of a real-time purification path display panel according to one embodiment;

[0026] FIG. 6 is a front view of the front view of a water vending apparatus according to one embodiment;

[0027] FIG. 7 is a front detail view of the secondary filling station in an unfolded state according to one embodiment;

[0028] FIG. 8 is a front detail view of the secondary filling station in a folded state according to one embodiment;

[0029] FIG. 8A is a downward view of the main nozzle assembly according to one embodiment;

[0030] FIG. 8B is an upward view of the main nozzle assembly according to one embodiment;

[0031] FIG. 8C is a side view of the main nozzle assembly according to one embodiment;

[0032] FIG. 9 is a diagram of the multipurpose interface according to one embodiment;

[0033] FIG. 10A is a diagram of the purification system as fully surrounded by insulation according to one embodiment;

[0034] FIG. 10B is a diagram of the purification system with an unfastened portion of insulation according to one embodiment;